CHAPTER 5

WATER QUALITY PARTNERSHIPS IN THE HARPETH RIVER WATERSHED

5.1 BACKGROUND. The Watershed Approach relies on participation at the federal, state, local and nongovernmental levels to be successful. Two types of partnerships are critical to ensure success:

- Partnerships between agencies
- Partnerships between agencies and landowners

This chapter describes both types of partnerships in the Harpeth River Watershed. The information presented is provided by the agencies and organizations described.

5.2 FEDERAL PARTNERSHIPS.

5.2.A. Natural Resources Conservation Service. The Natural Resources Conservation Service (NRCS), an agency of the U.S. Department of Agriculture, provides technical assistance, information, and advice to citizens in their efforts to conserve soil, water, plant, animal, and air resources on private lands.

Performance & Results Measurement System (PRMS) is a Web-based database application providing USDA Natural Resources Conservation Service, conservation partners, and the public fast and easy access to accomplishments and progress toward strategies and performance. The PRMS may be viewed at http://sugarberry.itc.nrcs.usda.gov/netdynamics/deeds/index.html. From the PRMS Products Menu, select "Products," then select "Conservation Treatments." Select the desired program and parameters and choose "Generate Report."

The data can be used to determine broad distribution trends in service provided to customers by NRCS conservation partnerships. These data do not show sufficient detail to enable evaluation of site-specific conditions (e.g., privately-owned farms and ranches) and are intended to reflect general trends.

CONSERVATION PRACTICE	ACRES
Conservation Buffer	104
Erosion Control	1,439
Irrigation Management	0
Nutrient Management Applied	1,474
Pest Management	1,425
Prescribed Grazing	1,492
Salinity and Alkalinity Control	0
Tree and Shrub Practices	17
Tillage and Residue Management	957
Wildlife Habitat Management	542
Wetlands Created, Restored, and Enhanced	13
Total	**7,463**

Table 5-1. Landowner Conservation Practices in Partnership with NRCS in Harpeth River Watershed. *Data are from PRMS for October 1, 1999 through September 30, 2000 reporting period. More information is provided in Harpeth-Appendix V.*

5.2.B. United States Geological Survey Water Resource Programs—Tennessee District.

The U.S. Geological Survey (USGS) provides relevant, objective scientific studies and information to evaluate the quantity, quality, and use of the Nation's natural resources. In addition to national assessments, the USGS also conducts hydrologic investigations in cooperation with numerous federal, state, and local agencies to address issues of local, regional, and national concern.

The USGS collects hydrologic data to document current conditions and provide a basis for understanding hydrologic systems and solving hydrologic problems. In Tennessee, the USGS records streamflow continuously at more than 60 gaging stations equipped with recorders and makes instantaneous measurements of streamflow at many other stations. Groundwater levels are monitored statewide, and the physical, chemical and biological characteristics of surface and ground waters are analyzed. USGS activities also include the annual compilation of water-use records and collection of data for national baseline and water-quality networks. National programs conducted by the USGS include the National Atmospheric Deposition Program, National Stream Quality Accounting Network, and the National Water-Quality Assessment Program.

Current Water Resource Investigation in Harpeth River Basin:

Estimation of Nutrient Loads in the Harpeth River Basin

Continuous Streamflow Information—Harpeth River Basin

- 03432350 Harpeth River at Franklin, TN
- 03432400 Harpeth River below Franklin, TN
- 03433500 Harpeth River at Bellevue, TN
- 03434500 Harpeth River near Kingston Springs, TN

For streamflow data, contact Donna Flohr at (615) 837-4730.

More information on the activities of the USGS can be obtained by accessing the Tennessee District home page on the World Wide Web at http://tenn.er.usgs.gov/

5.2.C. United States Army Corps of Engineers-Nashville District. The geographic boundaries of the Nashville District Corps of Engineers consist of the entire Cumberland and Tennessee river basins, a combined area of approximately 59,000 square miles. This includes portions of seven states: Tennessee, Kentucky, Alabama, Virginia, Mississippi, Georgia, and North Carolina.

Overall responsibilities for the Nashville District include operation and maintenance of 10 reservoirs within the 18,000 square mile Cumberland River Basin. These operate for some or all of the following purposes: hydropower, flood control, navigation, water supply, water quality, fish and wildlife, and recreation.

Within the 41,000 square mile Tennessee River Basin the Nashville District operates a series of navigation locks and has regulatory permit authority over dredge and fill activities under the Federal Clean Water Act.

WATER QUALITY ACTIONS WITHIN THE HARPETH RIVER WATERSHED

Cheatham Lock and Dam is located at Cumberland River Mile 148.7, and is just 4.3 miles downstream from the confluence of the Harpeth River. Because the Harpeth River is a major inflow into the lower reach of Cheatham Reservoir, the Nashville District Corps of Engineers has a keen interest in seeing water quality improvements occur within the Harpeth River watershed. The Nashville District Corps of Engineers collects physical, chemical, and biological water quality data from various locations in the Harpeth River watershed. These data contribute to a better understanding of water quality relationships in Cheatham Reservoir, as well as in Lake Barkley, the reservoir immediately downstream from Cheatham.

Cooperation with the Tennessee Department of Environment and Conservation, Division of Water Pollution Control

Water quality data collected by the Nashville District Corps of Engineers in the Harpeth River and other Cheatham Reservoir locations is provided to the Tennessee Department of Environment and Conservation to form a more complete picture of water quality conditions in the watershed. For some locations in the watershed, Nashville District Corps of Engineers data is the only water quality information available upon which regulatory decisions may be based.

Environmental Education

Environmental education opportunities are provided to area school age children by the Nashville District Corps of Engineers. Water Quality Control personnel participate in environmental awareness programs conducted at Cheatham Reservoir by providing information about various aspects of water quality. These presentations include "hands on" demonstrations of sophisticated water quality monitoring instruments and displays of biological specimens that demonstrate the diversity of aquatic resources and the responses of biological systems to varying water quality conditions. The value of such environmental education is enormous because it touches young people early in their lives. It, hopefully, contributes to a greater lifelong awareness of the importance of conserving and improving water quality and water resources on an individual basis. An added benefit is that many of the students attending the Cheatham Reservoir Environmental Awareness Day reside in the Harpeth River watershed.

Partnership/Assistance to the Cumberland River Compact

Nashville District Corps of Engineers has worked with the Cumberland River Compact over the past several years. Assistance to the Cumberland River Compact has taken several forms, from providing data and clarifying technical information to mapping assistance. The Cumberland River Compact has been particularly successful with involving stakeholders within the Harpeth River basin. One very tangible product of the relationship between the Nashville District Corps of Engineers and Cumberland River Compact is the production of the Harpeth River Watershed Map. When the Cumberland River Compact was chosen by the Southeast Watershed Forum as *The Tennessee Success Story for the Year*, it was due to the production of the Harpeth River Map. The prototype of this map, upon which later modifications were added, was the result of tapping into mapping/GIS expertise within the Nashville District Corps of Engineers' Water Management Section.

The address of the Nashville District home page is http://www.orn.usace.army.mil/

5.2.D. U.S. Environmental Protection Agency (EPA). As part of TMDL development being supported by EPA Region 4's Water Management Division, the Science and Ecosystem Support Division will conduct water quality studies of the Harpeth River. This study is a two-year effort that began with dry weather surveys in 2000, followed by wet weather surveys in 2001.

The primary objective of this study is to collect a representative set of water quality and hydraulic data for the Harpeth River in order to develop a calibrated model of the system

during low flow conditions. This calibrated model will be used as one of the TMDL development tools for the Harpeth River, and it is anticipated that it will provide a better understanding of the impact of nutrient enrichment and depressed dissolved oxygen concentrations during a time frame when nonpoint sources dominate the system. Ultimately, the model should be able to account for the difference between base flow point source dominated and high flow point and nonpoint source dominated conditions.

For more information, contact:

Tom McGill, PE
U.S. Environmental Protection Agency-Region 4
61 Forsyth Street, SW
Atlanta, GA 30303-8960
mcgill.thomas@epa.gov

5.3 STATE PARTNERSHIPS.

5.3.A. TDEC Division of Water Supply. Congress, the Environmental Protection Agency, and the states are increasing their emphasis on the prevention of pollution, particularly in the protection of the raw water sources for public water systems. The initial step toward prevention of contamination of public water supplies came with the Federal Safe Drinking Water Act Amendments of 1986. At that time, each state was required to develop a wellhead protection program to protect the water source of public water systems relying on groundwater (wells or springs). The new Source Water Assessment provisions of the Federal Safe Drinking Water Act of 1996 Amendments expanded the scope of protection beyond groundwater systems to include protection of the waters supplying surface water systems.

A “wellhead” is the source area for the water which is withdrawn through a well or spring, similar to the concept of the head of a river. To protect the water supply, it is important to know from where the water flowing to that well or spring is coming. Source water/wellhead protection areas for public water systems using groundwater are generally based on hydrologic considerations and/or modeling. Source water protection areas for public water systems using surface water are based on the portion of the watershed area upstream of the water intake.

There are three basic steps involved in a wellhead protection program: 1)Defining the wellhead protection area, 2)Inventorying the potential contaminant sources within that area, and 3)Developing a wellhead protection plan. The official designation of wellhead protection areas provides valuable input and emphasis to government agencies in the siting of facilities and the prioritization and cleanup of contaminated sites.

More information may be found at: http://www.state.tn.us/environment/dws.

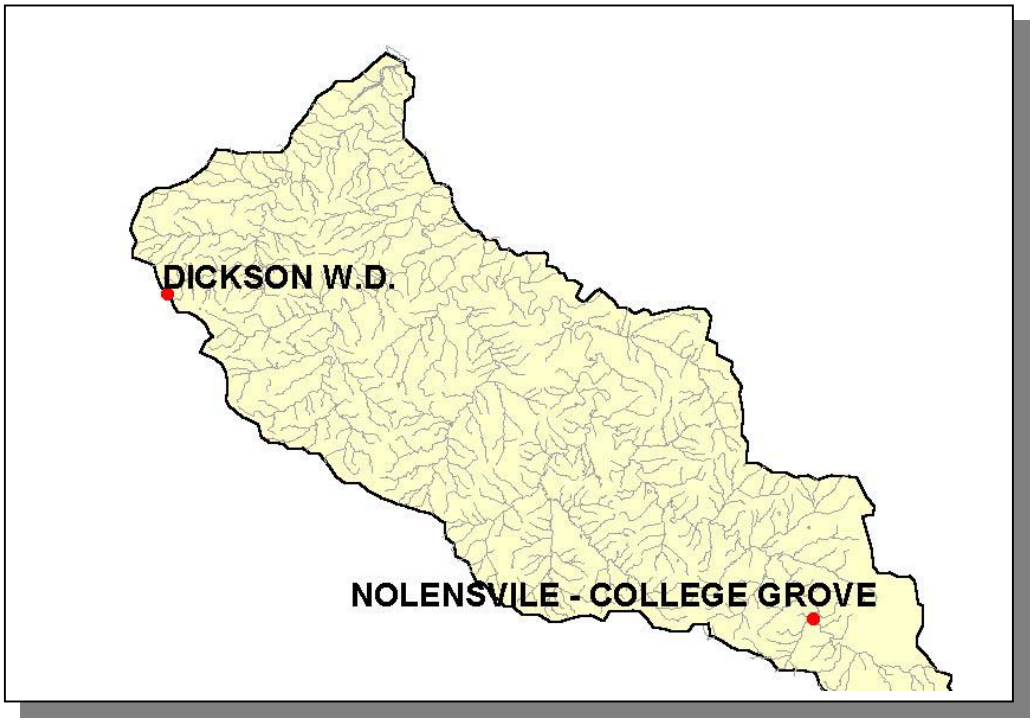

Figure 5-1. Location of Communities Using Groundwater for Water Supply in Harpeth River Watershed. *More information may be found in Harpeth-Appendix V.*

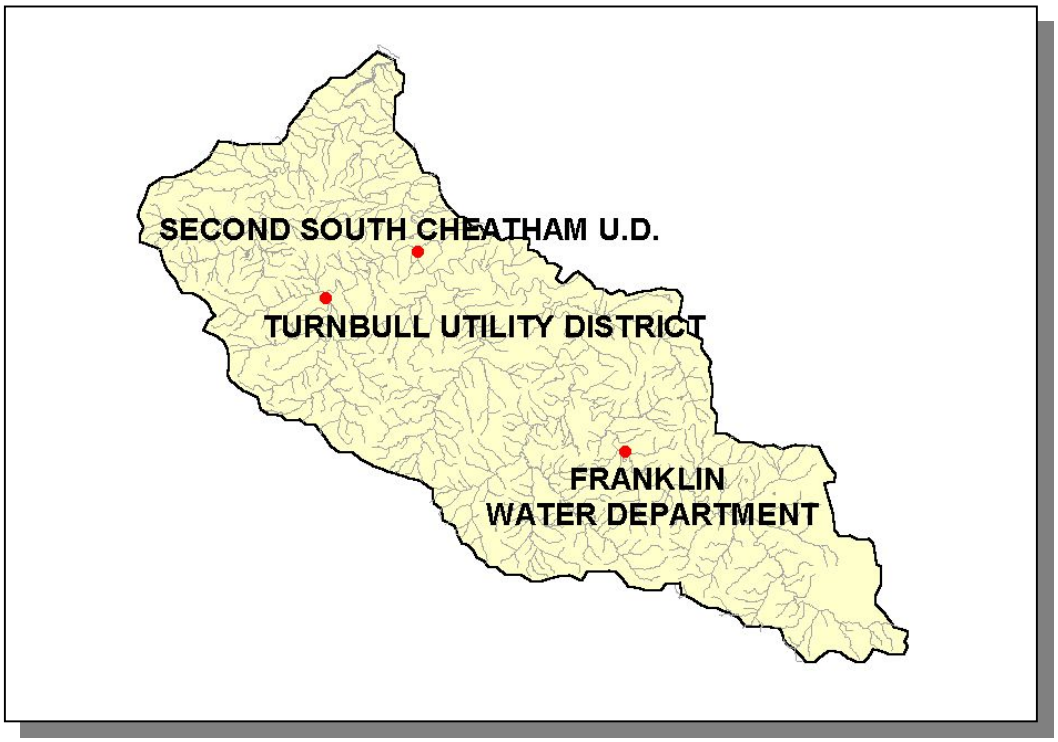

Figure 5-2. Location of Communities with Surface Water Intakes for Water Supply in Harpeth River Watershed. *More information may be found in Harpeth-Appendix V.*

As a part of the Source Water Assessment Program, public water systems are evaluated for their susceptibility to contamination. These individual source water assessments with susceptibility analyses are available to the public at http://www.state.tn.us/environment/dws as well as other information regarding the Source Water Assessment Program and public water systems.

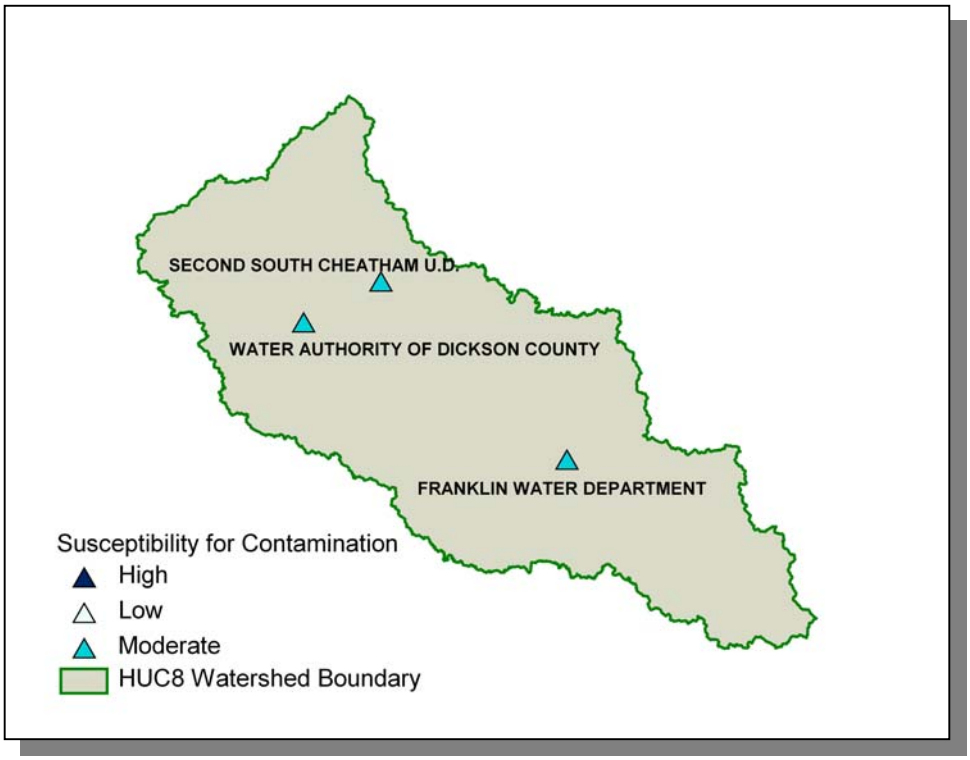

Figure 5-3. Susceptibility for Contamination in the Harpeth River Watershed.

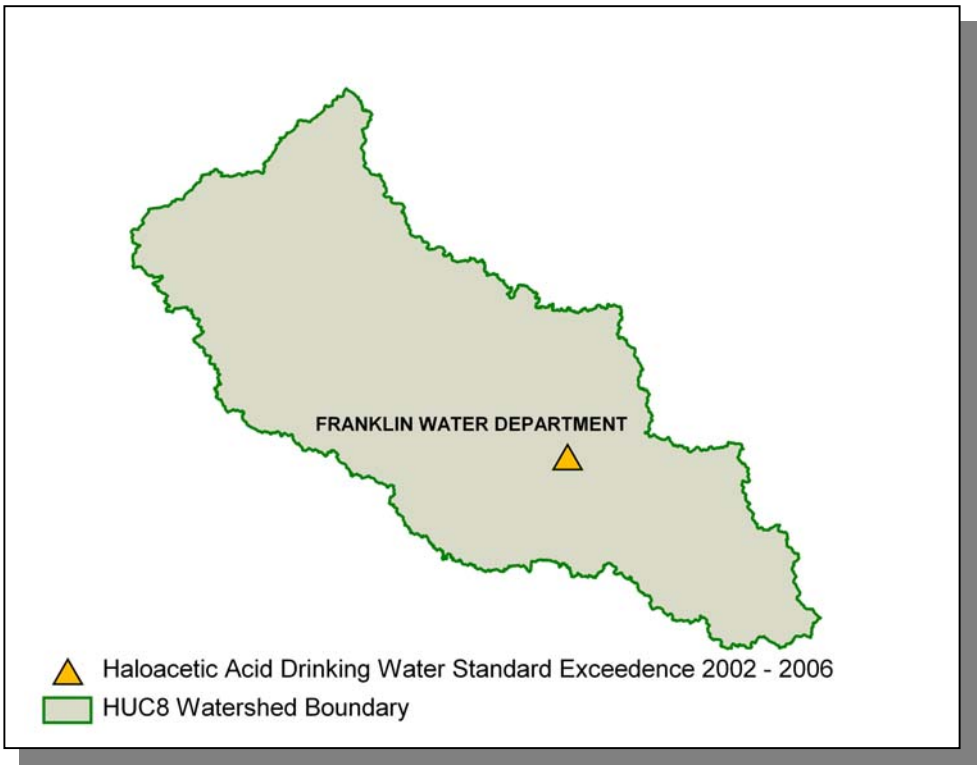

Figure 5-4. Exceedences of the Haloacetic Acid Drinking Water Standard in the Harpeth River Watershed.

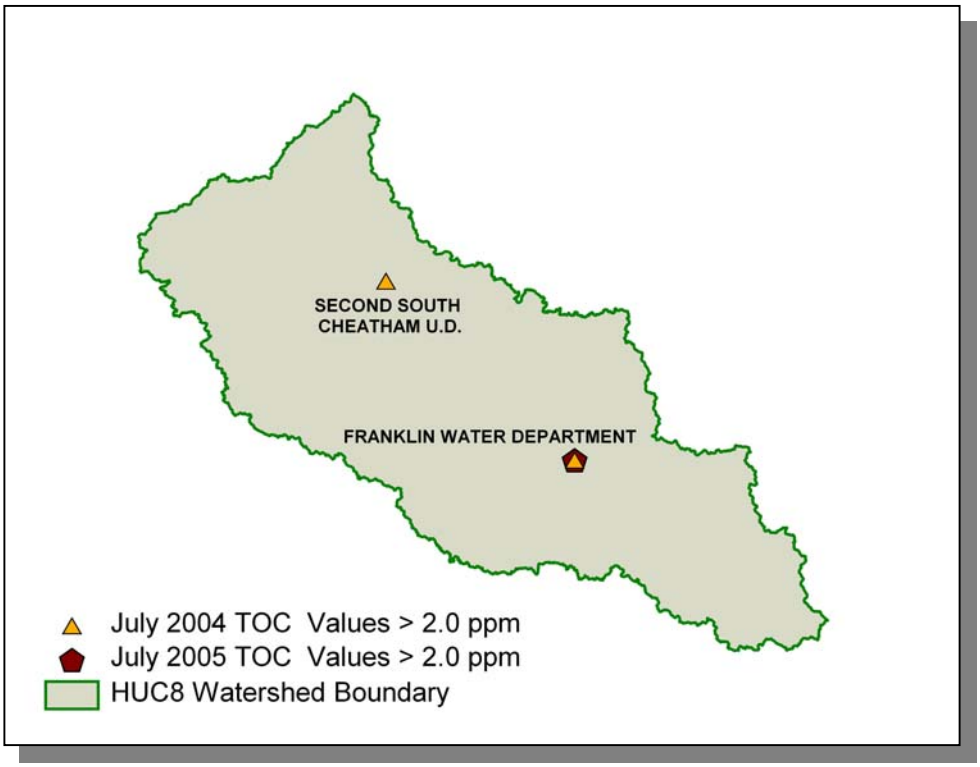

Figure 5-5. July 2004 and 2005 Raw Water Total Organic Carbon (TOC) Analysis in the Harpeth River Watershed.

5.3.B. State Revolving Fund. TDEC administers the state's Clean Water State Revolving Fund Program. Amendment of the Federal Clean Water Act in 1987 created the Clean Water State Revolving Fund (SRF) Program to provide low-interest loans to cities, counties, and utility districts for the planning, design, and construction of wastewater facilities. The U.S. Environmental Protection Agency awards annual capitalization grants to fund the program and the State of Tennessee provides a twenty-percent funding match. TDEC has awarded loans totaling approximately $500 million since the creation of the SRF Program. SRF loan repayments are returned to the program and used to fund future SRF loans.

SRF loans are available for planning, design, and construction of wastewater facilities, or any combination thereof. Eligible projects include new construction or upgrading/expansion of existing facilities, including wastewater treatment plants, pump stations, force mains, collector sewers, interceptors, elimination of combined sewer overflows, and nonpoint source pollution remedies.

SRF loan applicants must pledge security for loan repayment, agree to adjust user rates as needed to cover debt service and fund depreciation, and maintain financial records that follow governmental accounting standards. SRF loan interest rates range from zero percent to market rate, depending on the community's per-capita income, taxable sales, and taxable property values. Most SRF loan recipients qualify for interest rates between 2 and 4 percent. Interest rates are fixed for the life of the term of the loan. The maximum loan term is 20 years or the design life of the proposed wastewater facility, whichever is shorter.

TDEC maintains a Priority Ranking System and Priority List for funding the planning, design, and construction of wastewater facilities. The Priority Ranking List forms the basis for funding eligibility determinations and allocation of Clean Water SRF loans. Each project's priority rank is generated from specific priority ranking criteria and the proposed project is then placed on the Project Priority List. Only projects identified on the Project Priority List may be eligible for SRF loans. The process of being placed on the Project Priority List must be initiated by a written request from the potential SRF loan recipient or their engineering consultant. SRF loans are awarded to the highest priority projects that have met SRF technical, financial, and administrative requirements and are ready to proceed.

Since SRF loans include federal funds, each project requires development of a Facilities Plan, an environmental review, opportunities for minority and women business participation, a State-approved sewer use ordinance and Plan of Operation, and interim construction inspections.

For further information about Tennessee's Clean Water SRF Loan Program, call (615) 532-0445 or visit their Web site at http://www.tdec.net/srf.

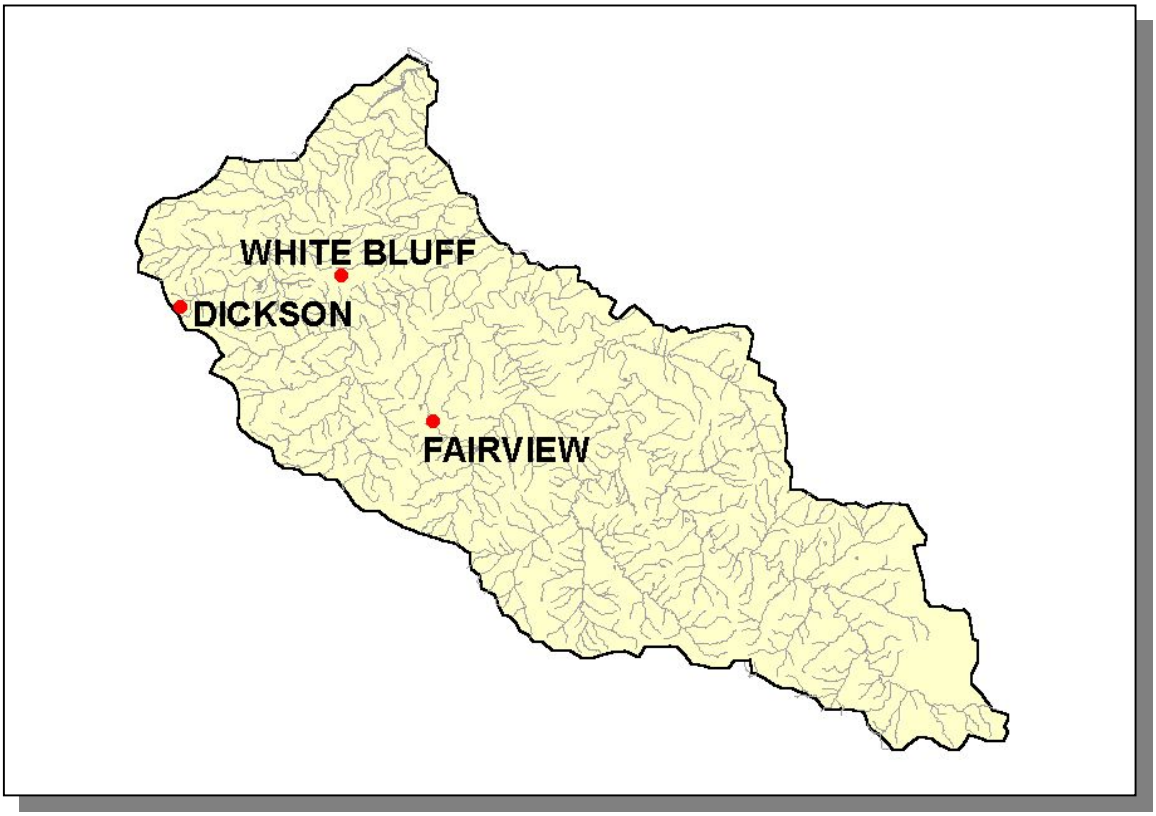

Figure 5-6. Location of Communities Receiving SRF Loans or Grants in the Harpeth River Watershed. *More information is provided in Harpeth-Appendix V.*

5.3.C. Tennessee Department of Agriculture. The Tennessee Department of Agriculture's Water Resources Section consists of the federal Section 319 Nonpoint Source Program and the Agricultural Resources Conservation Fund Program. Both of these are grant programs which award funds to various agencies, non-profit organizations, and universities that undertake projects to improve the quality of Tennessee's waters and/or educate citizens about the many problems and solutions to water pollution. Both programs fund projects associated with what is commonly known as "nonpoint source pollution."

The Tennessee Department of Agriculture's Nonpoint Source Program (TDA-NPS) has the responsibility for management of the federal Nonpoint Source Program, funded by the US Environmental Protection Agency through the authority of Section 319 of the Clean Water Act. This program was created in 1987 as part of the reauthorization of the Clean Water Act, and it established funding for states, territories and Indian tribes to address NPS pollution. Nonpoint source funding is used for installing Best Management Practices (BMPs) to stop known sources of NPS pollution, training, education, demonstrations and water quality monitoring. The TDA-NPS Program is a non-regulatory program, promoting voluntary, incentive-based solutions to NPS problems. The TDA-NPS Program basically funds three types of programs:

- BMP Implementation Projects. These projects aid in the improvement of an impaired waterbody, or prevent a non-impaired water from becoming listed on the 303(d) List.

- Monitoring Projects. Up to 20% of the available grant funds are used to assist the water quality monitoring efforts in Tennessee streams, both in the state's 5-year watershed monitoring program, and also in performing before-and-after BMP installation, so that water quality improvements can be verified.

- Educational Projects. The intent of educational projects funded through TDA-NPS is to raise the awareness of landowners and other citizens about practical actions that can be taken to eliminate nonpoint sources of pollution to the waters of Tennessee.

The Tennessee Department of Agriculture Agricultural Resources Conservation Fund Program (TDA-ARCF) provides cost-share assistance to landowners across Tennessee to install BMPs that eliminate agricultural nonpoint source pollution. This assistance is provided through Soil Conservation Districts, Resource Conservation and Development Districts, Watershed Districts, universities, and other groups. Additionally, a portion of the TDA-ARCF is used to implement information and education projects statewide, with the focus on landowners, producers, and managers of Tennessee farms and forests.

Participating contractors in the program are encouraged to develop a watershed emphasis for their individual areas of responsibility, focusing on waters listed on the Tennessee 303(d) List as being impaired by agriculture. Current guidelines for the TDA-ARCF are available. Landowners can receive up to 75% of the cost of the BMP as a reimbursement.

The Tennessee Department of Agriculture has spent $128,329 for Agriculture BMPs in the Harpeth Watershed since 1998. Additional information is provided in Harpeth Harpeth-Appendix V.

Since January of 1999, the Department of Agriculture and the Department of Environment and Conservation have had a Memorandum of Agreement whereby complaints received by TDEC concerning agriculture or silviculture projects would be forwarded to TDA for investigation and possible correction. Should TDA be unable to obtain correction, they would assist TDEC in the enforcement against the violator.

5.3.D. Tennessee Wildlife Resources Agency. The Tennessee Wildlife Resources Agency conducts a variety of activities related to watershed conservation and management. Fish management activities include documentation of fish and aquatic life through stream sampling and stocking of both warm water and cold water sportfish. Fish data are managed in the Geographic Information System (GIS) project called Tennessee Aquatic Data System (TADS). TWRA nongame and endangered species projects include restoration of special status fish ,aquatic life, and riparian wildlife including otters, and nongame fish such as the blue masked darter. The Agency conducts a variety of

freshwater mussel management, conservation, and restoration projects including the propagation and reintroduction of species once common in Tennessee streams. TWRA has been involved in riparian conservation projects since 1991 in partnership with state and federal agencies and conservation groups.

For information on these and other water resources related activities, please contact your Regional TWRA office at the following phone numbers:

West Tennessee (Region I)	1-800-372-3928
Middle Tennessee (Region II)	1-800-624-7406
Cumberland Plateau (Region III)	1-800-262-6704
East Tennessee (Region IV)	1-800-332-0900.

TDD services are available @ 615-781-6691.
TWRA's website is http://www.state.tn.us/twra.

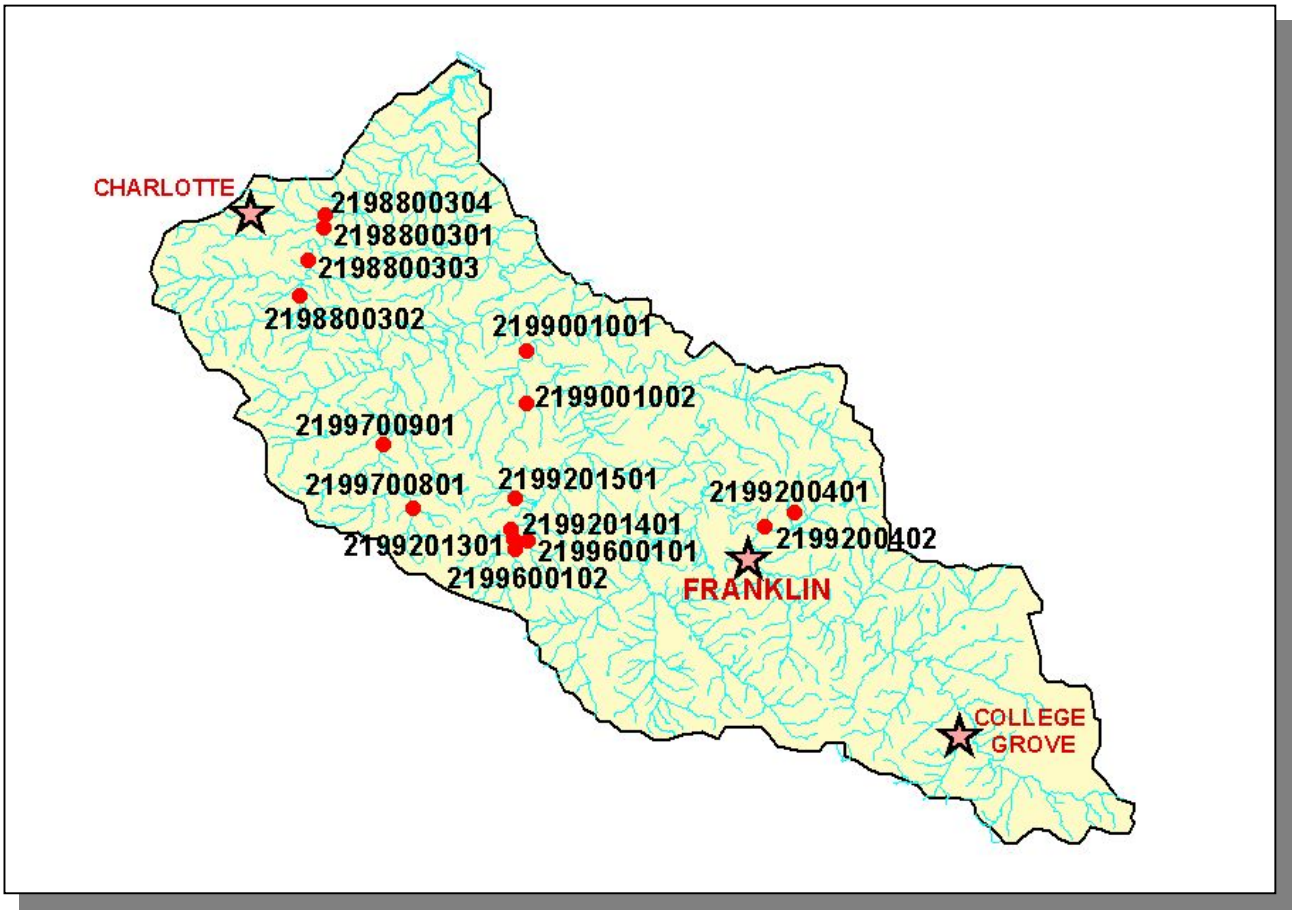

Figure 5-7. Location of TWRA TADS Sampling Sites in Harpeth River Watershed. *Locations of Charlotte, Franklin, and College Grove are shown for reference. Additional Information is presented in Harpeth-Appendix V.*

5.4 LOCAL INITIATIVES.

5.4.A. Cumberland River Compact. The Cumberland River Compact is a not-for-profit educational organization with a mission to*: enhance the water quality of the Cumberland River and its tributaries through education and by promoting cooperation among citizens, businesses, and agencies in Kentucky and Tennessee*.

The Cumberland River, 696 miles long, with a watershed that encompasses almost 18,000 square miles and a stakeholder population of nearly two million has provided the challenge of setting specific goals and utilizing an organized approach to have any effect on the river. By working with TDEC, the Compact started reaching out to the 14 separate watersheds which make up the Cumberland Basin – one at a time in conjunction with Tennessee's five-year watershed management cycle. One watershed has been completed, the Harpeth River. Stakeholders in the Harpeth formed their own organization and continue to work with the Compact and on their own on neighborhood workshops, river clean-ups, water quality testing and have gotten involved with local planning and zoning. They also send a member to the Compact Board meetings and Water Quality Advisory Committees to insure ongoing communication and partnering.

With the goal to educate and promote cooperation among citizens, businesses and agencies the following programs have been established:

- **Splash Bash Teacher Training and Festival** – A combination teaching and celebration program for the river. The Compact brings professionals who work in the field of water quality to teach teachers, and therefore their students, how to perform simple chemical testing, macro-invertebrate identification and learn watershed mapping. Each class adopts a local creek for the purpose of analyzing its health. After each classroom collects their data they come together for a day of exhibiting their data and having fun.
- **Marina Education Program** – This program targets marina owners and boarders to get them involved personally in the river's health. The first project completed was a series of signs reading: "You are in the Cumberland River Watershed – Don't Pollute the Boot." Each of the member marinas proudly displays their signs at their pump docks and offices. The second project the Marina Committee is working on, at marina owners' request, is setting up an education program specifically on pump-out stations – how they work, hook-ups to city sewers, etc.
- **Land Education Program** – Educating "strange bedfellows" through annual programs, the first workshop put on by the Land Committee was a *Conservation Easement Conference*. The Compact brought Stephen Small, the Boston attorney who wrote most of the IRS Codes on the subject of conservation easements, to speak with attorneys, CPA's, appraisers, as well as local landowners on the subject of protecting land through these means. The conference for 2001 will be *Conservation and Common Sense Development – A workshop for Building Better Communities*, co-hosted by the Tennessee River Eastbank Group, The Tennessee Homebuilders, The Tennessee Farm Bureau, the Compact, and others. Opening a dialog between developers, the government agencies who permit them and the citizens who live in their communities will be a wonderful opportunity for the Cumberland River Compact to build more bridges – and ultimately to help our river.

- **Water Quality Advisory Committee** – This committee is responsible for seeing that our technical information in beyond reproach. The committee has members who represent: the Kentucky Division of Water, the Natural Resource Conservation Service, Greater Nashville Regional Council, the Tennessee Department of Agriculture's Nonpoint Source Program, CTE Engineers, TDEC Division of Water Pollution Control, U.S. Army Corps Of Engineers, Nashville Public Works, Nashville Metropolitan Water Services, the United States Geologic Survey, and the Tennessee Wildlife Resource Agency. The two most outstanding products to come out of this Committee to date are the award-winning *Harpeth River Watershed Brochure* (a simple brochure/map of that watershed which answers two questions through the use of government data – Where can I swim? Where can I fish?) and the *Harpeth River Sediment Study Plan*. The Sediment Study Plan follows the Splash Bash Teacher Training in our outreach to each watershed. This project uses local volunteers to measure the sediment being carried through the streams of a particular watershed. Since silt is one of the leading pollutants to all southeastern rivers but is seldom tested by government agencies, this work is important not only to local citizens, businesses, and wildlife but also to our governmental partners who have given this project their stamp of approval.

The Cumberland River Compact was chosen by the Southeast Watershed Forum as *The Tennessee Success Story for the Year* – for the production of the Harpeth River Watershed Map – An Overview of Our Water Quality.

For additional information, contact:

Margo Farnsworth
Executive Director
Cumberland River Compact
P. O. Box 41721
Nashville, TN 37204
(615)837-1151 or email: screendoor@bigfoot.com
http://www.cumberlandrivercompact.com

5.4.B. Harpeth River Watershed Association. The mission of the Harpeth River Watershed Association (HRWA) is to motivate and mobilize the public to preserve and restore the Harpeth River Watershed through education and encouraging compliance with applicable public acts.

The HRWA is the only entity working in the Harpeth River's watershed that has this ecological system in its stated purpose. Other groups that work in the watershed are defined by various political boundaries or by sub-components of the watershed. The approach of HRWA is to:

- Facilitate, coordinate and initiate efforts on behalf of the entire watershed.
- Identify, involve and work constructively with people, businesses, and government entities that live or conduct activities in the watershed.
- Speak for the watershed and what is needed to restore biological integrity amidst various human uses in the watershed.

- Provide information, training, and activities that enable homeowners, landowners, families, and businesses to directly enhance areas of the watershed and become advocates for the Harpeth River and its tributaries.

The HRWA, an all volunteer membership organization, was formed in November 1998 by a group of concerned citizens in response to various pollution problems in the Harpeth, recent fish kills around Franklin, and efforts to expand sewage treatment in the growing Franklin area. This coincided with sampling and survey work in the watershed by TDEC as part of its water management program to gather water quality information. Through 1999, the HRWA participated in the stakeholder meetings conducted by the Cumberland River Compact that were designed to bring a diverse group of people together to discuss the needs of the watershed. One of the biggest concerns identified by this process was siltation.

The primary efforts of the HRWA to date:

- Raised money and is distributing the first watershed map for the Harpeth River, produced by the Cumberland River Compact. The map synthesizes the data from the TDEC 305b reports on water quality in an excellent format for the public to comprehend. The map identifies all segments of streams and the mainstem of the Harpeth River listed as "impaired" on state 303d list, and details the causes and sources of pollution.

- Launched the first sediment study in the watershed in collaboration with the Cumberland River Compact, who designed the volunteer based sediment study as an outcome of their stakeholder meetings. Over 30 volunteers are providing data as of the Fall of 2000.

- Collaborated with the Cumberland River Compact to conduct a day-long teacher training workshop on watershed ecology for secondary science teachers in Williamson County. These workshops are part of the Cumberland River Compact's Splash Bash education program.

- Worked with the City of Franklin on the taskforce to improve management of stormwater runoff.

- Documented non-compliance with road construction, suburban development and agricultural practices and encouraging compliance with applicable laws.

For more information, contact:

Harpeth River Watershed Association
P.O. Box 1127
Franklin, TN 37065

Dorene Bolze, President
Conservation Policy Specialist
Doriebolze@home.com
(615) 591-9095

5.4.C. Harpeth River Watershed Sediment Study. The Harpeth River Watershed Association (HRWA) and the Cumberland River Compact (CRC) are carrying out a study of sediment in the Harpeth River watershed; the two-year study is near the end of its first year. Twenty-seven volunteers have collected 631 turbidity measurements and 184 total suspended solids (TSS) measurements at 45 stations. Stream stages and rain gage readings are also routinely reported.

Assistance in the design of the study was obtained from Tim Diehl, Jim Kingsbury, and Ank Webbers (U.S. Geological Survey), Jimmy Smith (TDEC), Don Green (Tennessee Department of Agriculture, Nonpoint Source Program), Jenny Adkins (Natural Resources Conservation Service), and Bob Sneed (U.S. Army Corps of Engineers) through the CRC's Water Quality Advisory Board. Recruiting of volunteers and acquisition of equipment were facilitated by Al Cox, Dorie Bolze and Mary Brockman (HRWA) and Margo Farnsworth and Tracey Hay (CRC). Technical assistance is provided by Rick Lockwood (HRWA), The project is directed by Dave Wilson (CRC).

The data have been examined by a number of statistical tests. The average turbidities (reciprocal meters) for all stations having seven or more measurements (34 sites) have been computed; these show an enormous range--from less than 1 for Slickrock Branch (a near-pristine stream) to over 16 for the Harpeth River at Moran Road. Stations on the Harpeth, Little Harpeth, and West Harpeth Rivers tend to have quite high turbidities and TSS values. The South Harpeth is significantly cleaner (summed ranks test). Two stations on Turnbull Creek downstream from the I-40/840 interchange site have enough data to yield a meaningful average; both show excessive sediment.

One objective of this study is to explore the relationship between turbidity and TSS, which seemed in the project's early work to be well approximated by a single straight line. This conclusion was based on results on the Harpeth at Highway 100, the Little Harpeth at Vaughn Rd, the South Harpeth at South Harpeth Rd, and Garrison Creek; results from all four sites correlated well to the same straight line.

For individual stations one continues to find good linear correlation between turbidity and TSS, as illustrated by results for Garrison Creek and for the Harpeth River at Highway 100 in Bellevue, which show coefficients of determination of 0.96 and 0.95, respectively. However, two more sites now have enough data to warrant interpretation. The plots of TSS versus turbidity for the Harpeth River at Moran Road and for Turnbull Creek have slopes which are markedly less than the slopes of the plots of data from the Harpeth at Highway 100, the Little Harpeth at Vaughn Rd, the South Harpeth at South Harpeth Rd, and Garrison Creek. Evidently, there are variations in sediment characteristics from site to site. Theory suggests smaller particle sizes at the Harpeth at Moran Rd and at the Turnbull Creek sites than at the other sites.

For further information on the project contact:

Dave Wilson
Brown and Caldwell, 501 Great Circle Rd., Suite 150, Nashville, TN 37228.
(615) 250-1248
djwilson@brwncald.com

5.4.D. The Nature Conservancy. The mission of The Nature Conservancy is “to preserve the plants, animals and natural communities that represent the diversity of life on Earth by protecting the lands and waters they need to survive."

The Nature Conservancy's Tennessee Chapter has joined with several landowners in Williamson County's Kelley Creek watershed (South Harpeth River system) to preserve an intact example of western highland rim limestone seeps and associated habitats. Clear creeks with high fish diversity, rare plants like the large-leaved grass-of-Parnassus and Eggert's sunflower, and the shelf-like limestone rock outcroppings make Kelley Creek one of The Nature Conservancy's conservation priorities. In addition to the Conservancy owning over 50 acres in the project area, several landowners have pledged their intent to donate conservation easements on their tracts; these easements will allow limited development which does not impair the watershed's unique biodiversity and water quality.

For more information, contact Gabby Call, Director of Protection, gcall@tnc.org